

ABSTRACT OF THE DISCLOSURE

The invention relates to a variable optical attenuator utilizing a variable polarization rotator, preferably in the form of a liquid crystal cell, positioned between two birefringent elements, preferably in the form of two similar birefringent crystals. The first birefringent element splits a beam light into orthogonally polarized sub-beams, which are passed through the liquid crystal cell, thereby undergoing a desired polarization rotation. The second birefringent element recombines only a portion of each of the first and second sub-beams providing the desired amount of light as an output beam. To minimize insertion loss, a first lens is positioned between the first birefringent element and the liquid crystal cell, and a second lens is positioned between the liquid crystal cell and the second birefringent crystal. Ideally the liquid crystal cell is positioned a focal length away from the first lens, whereby both the first and second sub-beams enter the liquid crystal cell at the same point of entry, thereby minimizing polarization dependent loss (PDL) due to any anisotropy in the liquid crystal.